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CONTENTS

<i>Depth in Pictorial Art</i>	PAGE 5
BY A. AMES, JR.	
<i>Drawings by Benjamin West</i>	25
BY ALFRED MANSFIELD BROOKS	
<i>The Paris Exposition: A Glimpse into the Future</i>	33
BY ROGER GILMAN	
<i>Research Methods in Muhammadan Art</i>	43
BY ARTHUR UPHAM POPE	
<i>Reviews</i>	50

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FIG. 1—*An Example of the Illusion of Depth which can be Obtained Photographically*



FIG. 2—*Boston, Gardner Collection: Landscape, by Rembrandt*

DEPTH IN PICTORIAL ART

BY A. AMES, JR.

I. INTRODUCTION

THE study which is the subject of this paper was made possible by more sensitive and definite methods of observing depth effects in pictures than have formerly been used. Though many of the effects which will be described have been appreciated before, their existence was more often felt than known and the want of methods of positive demonstration made a clear analysis of the matter very difficult.

It is therefore necessary to begin by describing briefly these improved methods of observing depth effects. Their development resulted from a study of the illusion of depth in single pictures. A full description of this work is given in a paper of a rather technical nature recently published in the *Journal of the Optical Society of America*.¹

The various ways there described by which the illusion of depth from a picture may be increased are as follows:

1. Looking at a picture with one eye only.
2. Looking at a picture through an iconoscope. (An iconoscope is an instrument through which you look with two eyes from the point of view of a single eye.)
3. Viewing a picture from a greater distance.
4. Changing the convergence of the eyes from that normally required by the distance from which the picture is viewed. (This is done by placing prisms before the eyes.)
5. Looking at a picture through a small hole, 2 mm. or more in diameter, held close to the eye.
6. Changing the accommodation of the eyes from that normally required by the distance from which the picture is viewed. (This is done by putting spherical lenses before the eyes.)
7. Looking at a picture binocularly, one eye receiving a sharp image and the other a blurred one. (The best effect is obtained by blurring one image by a plus cylinder with its axis vertical.)
8. Looking at the reflection of a picture in a mirror, or through any instrument which limits the field and gives an uncertain point of view.
9. Looking at a picture with abnormal rotation of the visual images about the axes of vision. (This is done by a rather complicated arrangement of mirrors.)

Speaking broadly, the reason² these means increase the illusion of depth is that they interfere with, and in some cases quite prevent, the observer's judging the position of

1. *The Illusion of Depth from Single Pictures*, *Journ. Opt. Soc. of Amer.*, 1925, X, 2, p. 137.

2. For more complete explanation the reader is referred to the above-mentioned paper.

the canvas or paper on which the picture is painted. Where two eyes are used this is accomplished largely by preventing the functioning of binocular vision. When the observer is made uncertain as to the position of the plane of the picture he is no longer forced to realize that all the objects depicted are on one and the same plane. That is, he becomes liberated from the plane of the canvas. The objects depicted will then take positions in front of or behind one another as suggested by their relative sizes, perspective, and so forth.

The extent of the illusion of depth that we may get from a given picture depends upon which of the means we use in viewing it. The most marked effect is obtained by a combination of prisms, spherical lenses, a cylindrical lens, and looking at the picture in a mirror.³ This, however, is too complicated for general use. The simplest method which produces the most marked illusion is to look at a picture with a cylindrical lens held before one eye. The strength of the lens must be proper for the viewing distance and its axis must be vertical. Both eyes are employed in looking at the picture. The effect obtained approximates that which one gets with a stereoscope. Objects stand out clearly in their proper planes with intervening space between. There are the following means which, though more simple than the use of the cylinder, are not nearly so effective. They are: first, looking at a picture with one eye only; second, looking at it from a greater distance; third, looking at it in a mirror; fourth, looking at it through a small hole in a piece of black paper; and fifth, looking at it through a tube made of black paper.⁴

In making the studies which are the basis of this paper I used the cylindrical lens, as the most convenient, sensitive, and definite method of observing depth effects. I regret that neither can the depth effects which our reproductions illustrate be fully experienced, nor can the significance of this investigation be grasped unless the pictures and figures are looked at with such a cylindrical lens. I recommend that anyone who is interested in the technique of art get one and reread the paper, using the lens to study the illustrations.⁵

II. EXAMPLES OF ILLUSION OF DEPTH

Almost any good photograph produces a considerable illusion of depth, as can be confirmed by looking at it with a cylinder or depth lens. This depth is naturally more

3. This combination is described in the article cited.

4. For this simple and convenient device we are indebted to Mr. Edwin M. Blake. The principle is the same as that which is involved when looking through an instrument and is described in the article above-mentioned.

5. Either a plus or a minus cylinder is effective. A plus cylinder, however, is recommended. For general use a plus 2.50 D cylinder works very well. For viewing pictures two or three feet away the lens is held a number of inches from the eye. For viewing at greater distances the lens is brought back nearer to the eye.

For use at distances less than those mentioned a stronger lens (+3.D or +3.5D) should be used; for use at greater distances a weaker one (+2.D or +1.5D). One must remember to hold the axis (which is usually marked by two lines on the glass) in a vertical position and to look with two eyes just as if the lens were not there. It should be placed in front of the less perfect eye. These lenses may be conveniently obtained for a reasonable price, under the name of "depth lenses," from Pinkham and Smith Co., 292 Boylston St., Boston, Mass.

As to the question of whether the use of such a lens



FIG. 3—New York, Metropolitan Museum: *Banks of the Oise*, by Daubigny



FIG. 4—New York, Metropolitan Museum: *Holland Cattle*, by Troyon



FIG. 5—New York, Metropolitan Museum: *Young Girl Asleep*,
by Vermeer



FIG. 6—New York, Metropolitan Museum: *Landscape*,
by Daubigny

marked where the picture is of objects at varying distances and is most marked when there are objects in the immediate foreground. The photograph shown in Fig. 1⁶ gives a very pronounced illusion. Not only do the trees stand out with great distance between them and the background but the branches themselves stand away from one another. When the lens is removed from the eye the distance tends to collapse and the whole picture to become flat.

If we look at a painting with a cylinder or depth lens we get a similar effect—that is, granting that the picture has been properly painted. The illusion is very well shown by the painting of a landscape by Rembrandt (Fig. 2). The obelisk stands well out from the distant background and the trees on the right appear nearer than the obelisk.

If, however, the artist has made a mistake it will show up much more clearly with the depth lens than without it. The reason for this is that when the depth in a picture, or the separation of its various planes, is increased the failure of any depicted object to lie in its proper plane becomes much more evident. A very good illustration of how such defects are made more evident is illustrated in the picture by Daubigny (Fig. 3). When looked at with the depth lens it will be seen that the high lights on the water over the ducks instead of being on the surface are floating in the air at some distance above the ducks. In another picture by Daubigny (Fig. 6) the flecks on the water take their place perfectly except for one large fleck near the left bank of the brook, which seems too light in value and raises the surface of the water at that point.

Another illustration of a detail in a painting coming out of its proper plane is shown in a painting by Vermeer (Fig. 5). The wall and door frame on the right instead of being back where they belong seem to be right up against the chair.

These illustrations are examples of numerous similar, though perhaps less pronounced, mistakes which may be found by studying the works of the great masters with the depth lens. More marked mistakes can be found in the works of living artists, even of the conservative school. I recommend such a study of the works of both ancient and modern masters as most interesting and instructive.⁷ Many of these defects are evident without the use of the depth lens. Others cause one to feel that something is wrong in the picture but one is not sure what the trouble is until the lens has been used. In all cases, once the defect has been seen with the lens it is very evident thereafter to the unaided eyes.

will produce eye strain, I can only say I have used one almost daily for about a year and have noticed no effect whatsoever.

It may be possible that persons with considerable ametropia will get no effect. In such a case a cylinder could be prescribed which would produce the same effect as that produced on a person with normal vision by the cylinders described above.

6. I wish to express my thanks to Mr. R. E. Clark, of Washington, D. C., for permission to publish this photograph.

7. Other examples of pictures in which depicted objects do not keep in their proper plane are:

a. Rubens, *Couronnement de Marie de Médicis*, Louvre. In a reproduction which I have of the head of Marie de Médicis the collar on the further side of her neck comes too far forward and the modeling of the upper arm is not right. I have not studied the original picture; these defects may be due to faulty reproduction.

b. Corot, *Noon*, National Gallery, London. In the reproduction of this picture the leaves on the trees in

The depth lens, showing up such defects, is an aid to artists in painting. It serves much the same purpose as a mirror but is more effective due to the greater illusion of depth which it produces. It is also somewhat easier to use, and a painter can actually work on his canvas while looking through the depth lens, as he cannot with a mirror.

While studying the paintings in the museums of New York, Philadelphia, and Boston and looking through reproductions of other paintings, I found that there were certain pictures which gave a very much greater illusion of depth than others. The pictures that especially impressed me in this respect were by Rembrandt, Rubens, Turner, Daubigny, Corot, Whistler, Monticelli, Winslow Homer, Abbot Thayer, Renoir, Twitchman, Metcalf, Bellows, Sargent, and Benson.

To illustrate this difference in depth effect we are reproducing examples of paintings of the two types. Holland Castle, by Troyon (Fig. 4), is a good example of the depth effect that is ordinarily found. The illusion is comparable to that which we get from a well taken photograph. The nearest cow stands well out surrounded by space, but there is relatively little separation of planes in the rest of the picture. Figs. 2, 6, 7, 8, 9, and 10 are good examples of the types of pictures by the above-mentioned group of artists which give a more marked illusion of depth.

In Fig. 7,⁸ a picture by Corot, the depth is very striking. When studied with the depth lens it will be seen that the figures, trees, bushes, and flowers seem to stand out surrounded by space. Corot exhibits this same skill in most of his later work. In his painting, Une Rue de Douai, in the Louvre, the tower stands out in the air with true stereoscopic effect, though in my reproduction a white building at the end of the street is of slightly too light a value, which carries it too far forward.

In the Daubigny (Fig. 6) the illusion of depth in the branches of the trees and between the surface of the water and the reflections is exceptional.

Turner was most successful in making the clouds float out of his canvas and in rendering atmospheric effects. In his Rain, Steam, and Speed (Fig. 9) he has produced a depth of atmosphere which, in my limited search, is unapproached. If you look with the lens at the atmosphere over the train it seems to have actual thickness. I can get the same effect after I have ceased to use the lens. Similar effects can be seen in his pictures in the Metropolitan Museum, the Boston Museum of Fine Arts, and in the Widener Collection.

the left middle ground instead of being on the trees are floating in the air some distance nearer than a horse and wagon in the foreground. They tend to pull the trees out with them and upset the entire perspective of the picture. These defects also may be due to reproduction, but as they partly result from the leaves in question being too large they are probably apparent in the original.

c. Anton Mauve, Changing Pasture, Metropolitan Museum. The darker flecks representing grass are too dark and float out in the air. This may well be due to

the paint with which they were drawn having darkened with age.

d. George Inness, Spring Blossoms, Metropolitan Museum. The rendering of the top branches and blossoms on the near tree bring them too far forward relative to the figure, and the horizontal accents on both sides of the figure float in space above the ground.

The defects mentioned in c and d are of course minor but are interesting as a study.

8. The only reproductions of the paintings of Corot and Turner in the Metropolitan Museum and the Bos-



FIG. 7—*Paris, Louvre: Landscape, by Corot*



FIG. 8—*London, National Gallery: Peace, by Turner*



FIG. 9—London, National Gallery: *Rain, Steam, and Speed*, by Turner



FIG. 10—New York, Metropolitan Museum: *Cannon Rock*, by Winslow Homer

Winslow Homer's work as exemplified by Fig. 10 exhibits depth qualities not so much in the matter of atmosphere as in the positive way in which objects take their proper planes.

This marked depth effect is lacking in the earlier works of all three of these men. What means did they use to produce this superior illusion of depth? The answer to that question can only be found by analyzing the factors in paintings which assist in producing the illusion of depth.

III. BASES OF THE ILLUSION OF DEPTH

(a) *Linear Perspective*

I shall not stop to explain at length the way in which the difference in size of the objects depicted, or the loss of detail with increased distance, suggests depth, or how assistance is rendered by shading and shadows. Nor need I describe how linear perspective, that is, the converging of parallel lines to disappearing points, plays its part in the illusion. These things are known and practiced by every artist. I do wish, however, in connection with perspective to point out that a greater illusion of depth is obtained by using curvilinear perspective than the ordinarily used rectilinear form. This is especially marked in wide-angle pictures. The nature and effect of curvilinear perspective, which is really a proper amount of so-called "barrel distortion," are shown in Figs. 11 and 12. Fig. 11 is in rectilinear perspective. Fig. 12 is in curvilinear perspective. The greater depth in Fig. 12 as compared with Fig. 11 is evident to the unaided eyes. By comparison, the vaulted roof in Fig. 12 seems to curve over much more naturally and the lower corners of the picture do not drop down and out as they do in Fig. 11. When the two pictures are looked at with the depth lens these differences become more marked. Although not commonly used, curvilinear perspective has long been recognized as necessary by some of the great masters, as was pointed out by W. W. Ware in his *Modern Perspective*.⁹ Fig. 16 shows the use of curvilinear perspective by Israels.

Certain characteristics of binocular vision, reproduction of which in a painting tends to increase the effect of depth have been described elsewhere.¹⁰

(b) *Aërial Perspective*

I wish to dwell more on aërial perspective and some other effects which produce what might be called aërial depth.

ton Museum of Fine Arts which I could get fail to give much of the depth effect that can be seen in the originals. I am therefore using in Figs. 7, 8, and 9 reproductions of pictures which are not in this country.

9. Those who are interested in the explanation as to why curvilinear perspective produces this effect are referred to *Vision and the Technique of Art*, Ames, Proctor, and Ames, *Proc. Amer. Acad. of Arts and Sciences*, Vol. 58, No. 1, and *Un facteur méconnu de la vision en relief*, *Pech. L. J.*, *C.r. soc. de biol.*, 83, 166-167.

10. The explanation of this matter was given by us

in *Vision and the Technique of Art*, in the chapter on binocular vision, and by H. W. Butler, *Painter and Space* (Scribner's, 1923), more at length and from a slightly different standpoint in his chapter on binocular perspective. It was actually practiced, however, long before by William M. Paxton, the painter. It is based on our seeing objects nearer and farther than the object upon which the eyes are focused as doubled due to the different points of view of our two eyes.

At present I do not feel that this is such an important factor as I did when our paper was written. This change

Aërial perspective results from the hazing and blueing of distant objects by the intervening atmosphere. Its effects may be described as fourfold. First, it makes all edges of distant objects softer. Second, it makes all distant dark objects appear more blue, and distant light objects, redder. Third, it reduces the chroma of all distant objects, that is, it dulls or grays all distant colors. And fourth, it makes all distant light objects darker than nearer objects of the same brightness and all distant dark objects lighter than similar nearer dark objects.

Now, as to the first of these fourfold effects, that is, the softening of edges in the distance, suppose that the artist has painted two objects on his canvas in the same color and value and wants to make one of them appear farther off. He can accomplish this by softening its edges. This is shown in Fig. 20. Those with trained eyes will see that the black patch with soft edges lies behind the one with sharp edges. When viewed with the depth lens the difference of plane is very marked.

The second of the fourfold effects, that is, the bluer appearance of more distant objects, also can be used to suggest depth. The fact that blue colors recede and red advance is well known by all artists. This effect becomes much more marked under the lens, as is illustrated in Fig. 19.

An intervening atmosphere, however, does not cause all distant objects to appear bluer. It has that effect only on darker objects. Where the light from distant objects is brighter than the scattered light from the atmospheric particles, the color of such distant objects will appear warmer. For this reason the sun and moon when they are near the horizon and are seen through the atmosphere appear red. Any white or near-white objects which reflect considerable light appear warmer through an atmosphere, as, for instance, the distant snow in a winter landscape, which appears warmer than that in the foreground.¹¹

The third effect, the reduction of chroma in distant colors, though practiced by many painters may not be so well understood. Fig. 19 also shows how the weaker

has resulted from a more complete understanding of what a limited field it is in which we see doubled images. It is ordinarily restricted to the area immediately surrounding the lines of vision. The images of all other objects, though they may fall on non-corresponding points of our two retinas, we see singly but in perspective. Further, where a doubling does exist there may be a suppression of one image, the other remaining as sharp and contrasting as if seen monocularly. Moreover, when doubled images are depicted, I would now tend to believe that the greater depth effect which we get, as in figs. 41 and 42 in the paper on *Vision and the Technique of Art*, results primarily from the reduction of value and the softening of edges of the objects in the background, and is not due to a doubling effect. Objects that are seen double do not necessarily become of a value intermediate between their own and that of the background against which they are seen.

I do not mean that depth effects cannot be obtained

by judicious doubling of edges, or that this method should not be used, but that the matter is not so obvious as it would at first appear and that the effects should be used with wisdom. This opinion is confirmed by numerous photographs we have which reproduce the binocular doubling.

I consider the real contribution made by Mr. Butler in his chapter on binocular perspective to consist, broadly, in his pointing out the limitations the artist imposes upon himself when he represents everything in the scene as it appears to him when he looks directly at it, and, specifically, in his presentation of a type of picture in which the artist focuses only on those objects which lie in the plane of the object of principal interest. This is a technical form which seems most admirably suited for certain types of pictorial expression.

11. It should also be remembered that the relative values of red and blue change with change of illumination. With reduced illumination blue appears relatively

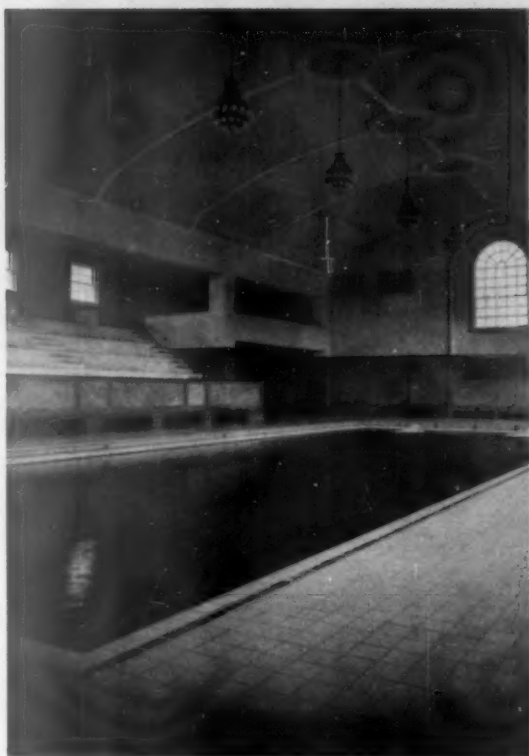


FIG. 11—*Reproduction of an Interior in Rectilinear Perspective*

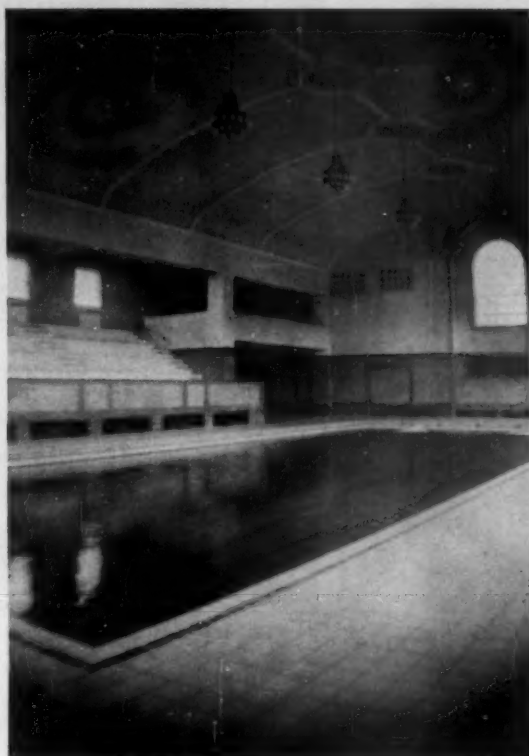


FIG. 12—*Same Picture as Fig. 11 in Curvilinear Perspective or "Barrel" Distortion*

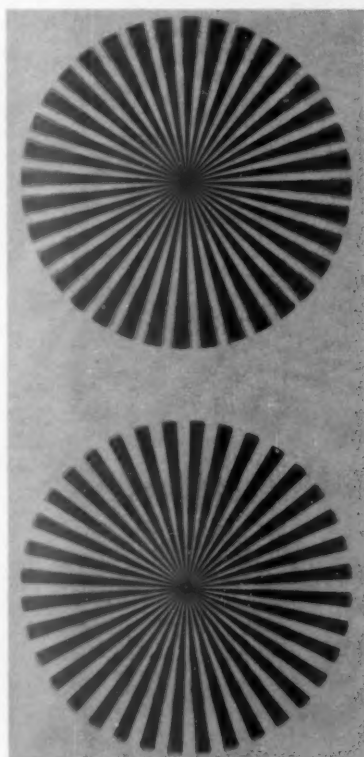


FIG. 13—*Figures showing that Soft Edged Radial Lines appear nearer than Hard Edged Radial Lines*

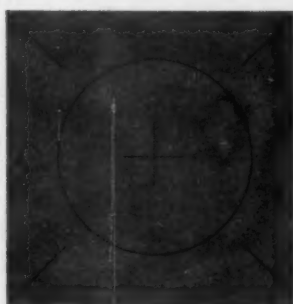


FIG. 14—*Figure showing that Radial Lines appear more distant than Tangential Lines*

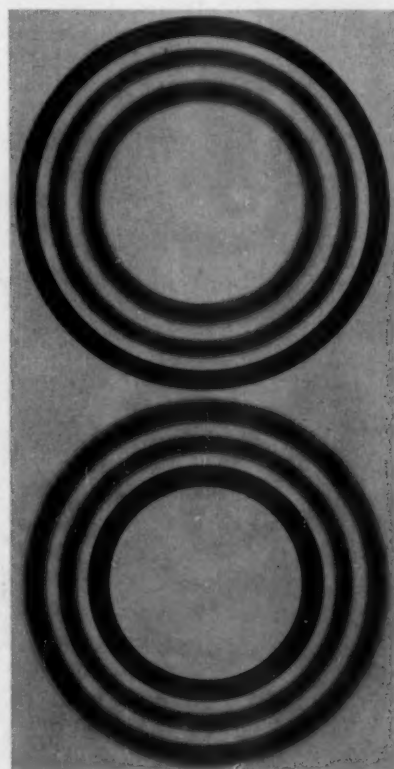


FIG. 15—*Figures showing that Soft Edged Tangential Lines appear more distant than Hard Edged Tangential Lines*



FIG. 16—*Boston, Museum of Fine Arts: The Day before Parting, by Israels*



FIG. 17—*Boston, Museum of Fine Arts: Landscape, by Corot*

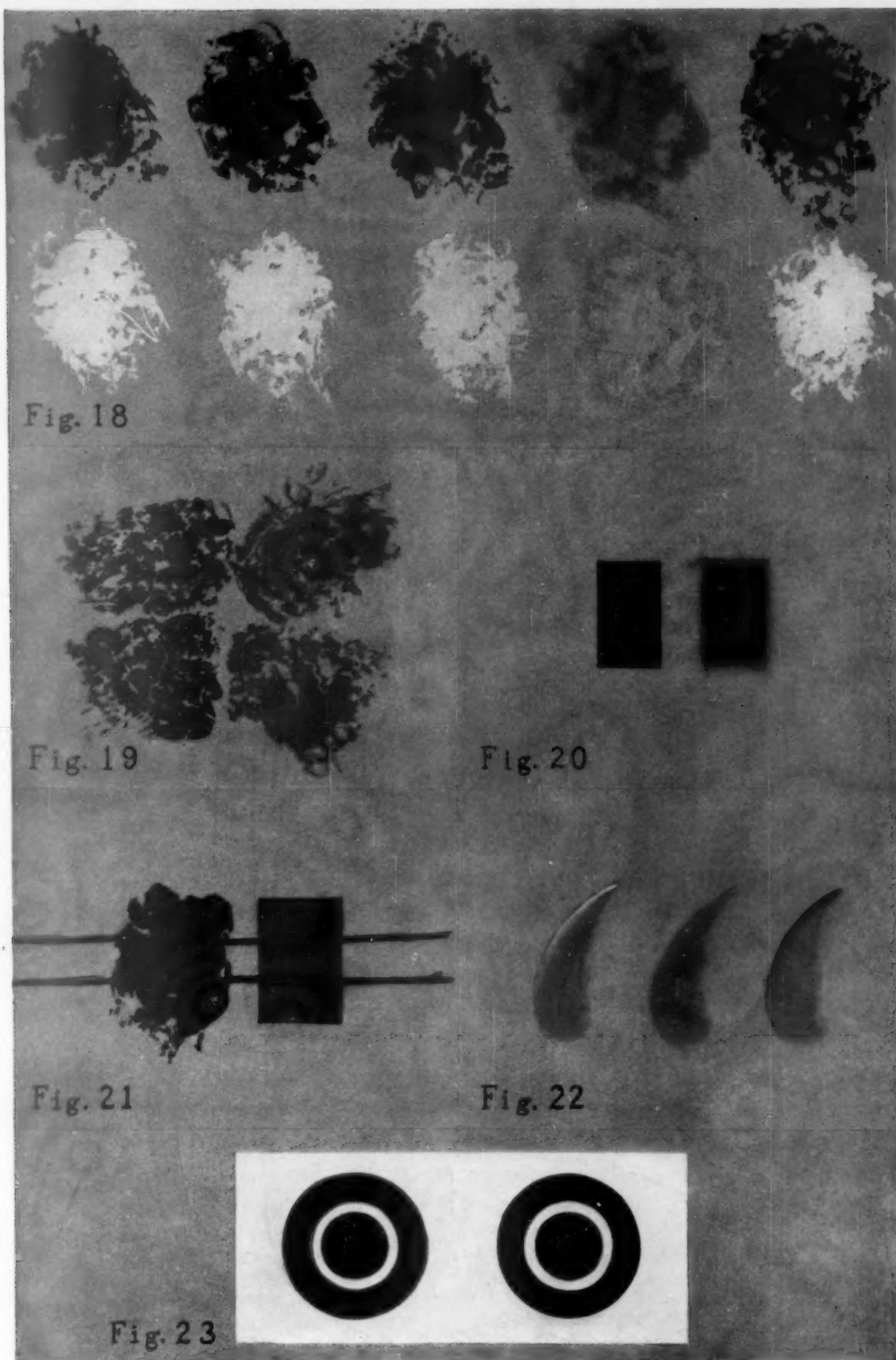
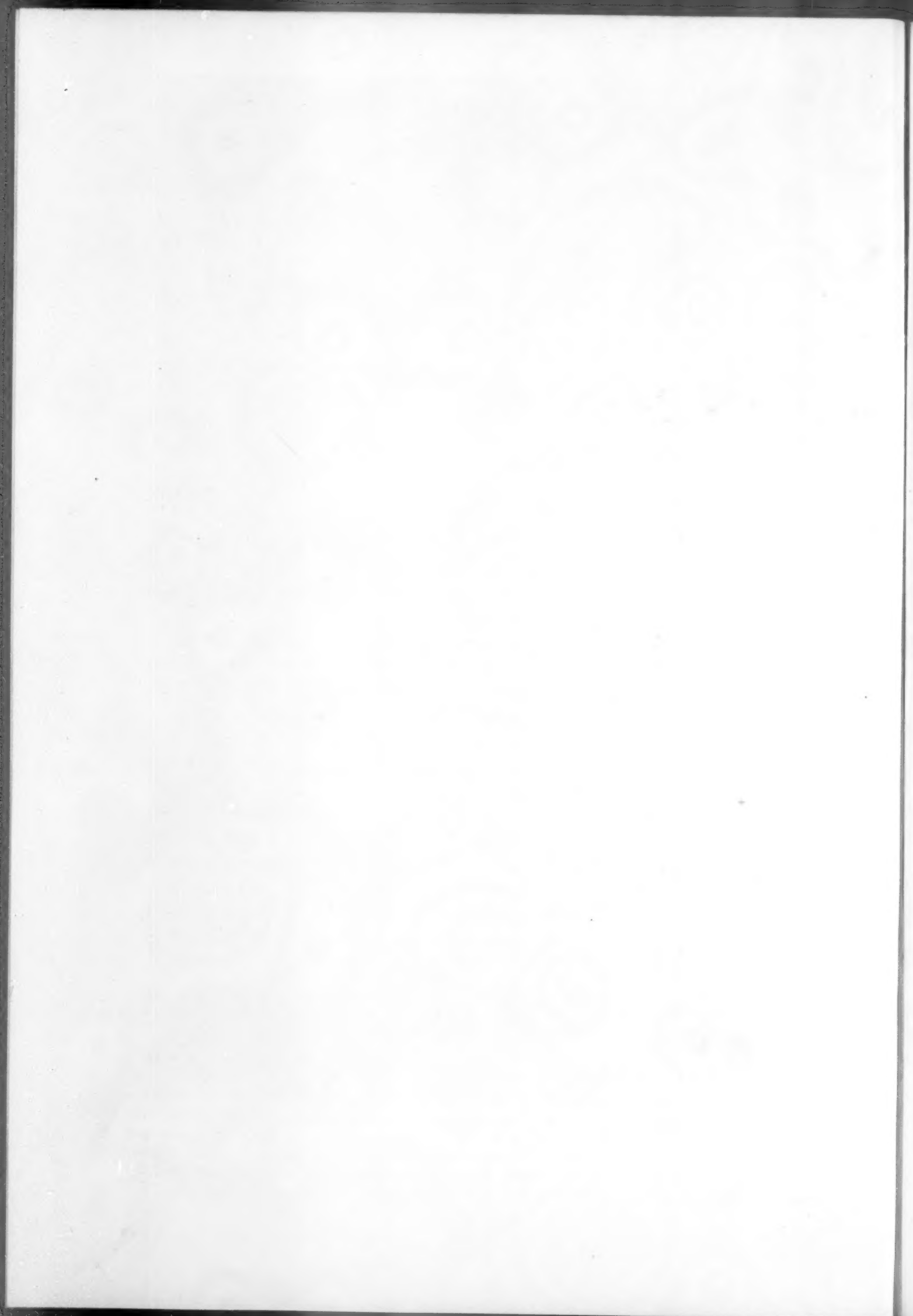


FIG. 18—Figures showing that Values near that of the Background appear more distant than either High or Low Values. FIG. 19—Figures showing that Cold Colors appear more distant than Warm Colors and that Weak Chromas appear more distant than Intense Chromas. FIG. 20—Figures showing that Soft Edges appear more distant than Hard Edges. FIG. 21—Figures showing Depth Effect produced by "Overlay." FIG. 22—Figures showing the Effect on Depth produced by "Accents." FIG. 23—Figures showing that Dark Objects with Blue Edges appear more distant than those with Red Edges.



chroma appears more distant, the difference in plane being very evident with the depth lens.

The fourth effect, the darkening of distant light objects and the lightening of distant dark objects, is a very effective aid to the suggestion of depth.¹² This is illustrated in Fig. 18. It will be seen with the lens, if not with the unaided eye, that beginning at the left and going to the right each patch of color drops back to a plane behind the patch on its left until the end of the line, where the white and black patches float well out in front of those on their left, which are nearest in value to the paper. If the lens is removed the light and dark values will be seen to drop back, though a difference in plane can still be noticed. In painting it is possible to work forward from a middle value background with both lights and darks. In black and white work where white paper is the background it is only possible to work forward with increased darks. The range in both cases is the same, but there is less variety with the white background.

(c) *Ocular Factors*

Another type of effect which helps produce aerial depth is due to the peculiar structure of our eyes, which causes us to see objects depicted with certain colored edges nearer than others.¹³ If dark objects which are drawn or painted on a canvas are surrounded by red edges they will appear on a plane nearer than that of the center of focus of the picture. Similar dark objects surrounded by blue edges will appear on a plane farther than the center of focus. This effect is shown in Fig. 23. It will be seen that the circle and rings with red edges stand out in front of those with blue edges.

Ocular factors are also responsible for a type of effect that helps to differentiate difference of planes in indirect vision. This also is due to the peculiar structure of our eye.¹³ If in a painting lines with hard edges are drawn radially from the center toward the sides of the canvas they will tend to appear in the background. If, on the other hand, lines with hard edges are drawn circularly, or tangentially to a circle around the center of the picture they will appear to come forward. This is illustrated by Fig. 14, where the circle appears on a nearer plane than the radial lines.

This advancing and receding of radial and tangential or circular lines is modified by a further fact. If we soften the edges of hard radial lines it will cause them to appear to advance. This is shown in Fig. 13. It will be seen that where the radial lines are softened they appear nearer. The upper design, therefore, looks like a megaphone horn or morning-glory, while conversely the lower appears to bulge forward until close to the center, where, there being no shading on the lines, they recede again.

lighter and red relatively darker. As a result, a red patch in a picture which stands out in front of a blue one of the same value, due to its warmer hue, may when viewed in reduced illumination appear behind the blue patch, due to the perspective effect of value resulting from the darkening of the red and the lightening of the blue.

12. Prof. Butler, *op. cit.*, has a most informative and

interesting chapter on atmospheric perspective, in which he deals at length with the important part that values play in the production of the effect of depth. He does not, however, treat the subject from our point of view.

13. Those who are interested in the why and wherefore are referred to the above-mentioned paper on *Vision and the Technique of Art*.

With tangential lines, softening of the edges tends to make them look farther away, as is shown in Fig. 15: the circles which are hard-edged appear nearer than those which are soft, so that the upper figure looks concave and the lower one looks convex.

This characteristic radial and tangential accentuation in indirect vision is also accompanied by characteristic chromatic edges which can be used to help make the objects at the side of the picture take their proper plane. These have been described in a general way in the article on *Vision and the Technique of Art*. It is hoped that at some future time this entire subject may be presented in a detailed and comprehensive manner.

(d) *Overlay and Accent*

There is another means, a much-used technical trick, which produces a sense of difference in plane and which it might be well to mention here, that is, the putting on of the pigment in such a way that it is evidently laid over what is behind it. This effect, which might be called "overlay," is shown in Fig. 21, where the colors that are put under and over lines appear to be quite separated in plane.

And, finally, there is the effect of accent. A patch of color will take the plane of an accent painted on it granting the mind associates the accent with the spot of color. Fig. 22 shows how light and dark edges bring a patch of color forward. They call to mind the familiar black outlines used to make figures stand out from the background. The flecks in the lower left-hand corner of the picture by Corot (Fig. 17), which float out alone in space, are examples of accents which are not associated with the objects on which they are placed.

In concluding this brief description of certain effects that produce aërial depth I wish to remind the reader that the separation of planes illustrated by our reproductions is due to but one effect or factor in each case. The depth becomes greater when the different factors are properly combined. And in a painting where other depth aids, such as difference in size and perspective, are used to give suggestions of planes of absolute distance the mind will associate depicted objects with these different planes granting they have been painted with the proper edges, hues, chromas, values, accents, and so forth.

A description of the various possible combinations and interrelations between all the various depth factors would be of interest but is beyond the scope of this paper. I shall, however, take space to say a word as to the characteristics which cause color patches to take their position in the extreme distance or in the foreground. Soft edges, bluish color for dark objects, low chroma, and middle values are characteristic of distant objects. Sharp edges, warm color, full chroma, and extreme values are characteristic of objects in the foreground. All the characteristics associated with distant objects are possible, however, in objects in the foreground. Such an object, for instance, may be fuzzy-edged, as fur or grass or pine boughs; it may be blue of low chroma and of any middle value. In a picture such objects can be kept in the foreground by using charac-



FIG. 24—*Boston, Museum of Fine Arts: Rubens' Master and his Wife, by Rubens*



FIG. 25—*New York, Metropolitan Museum: Monadnock, by Abbot Thayer*

teristics of foreground objects. For instance, if the object has a soft edge, make it of warm color, or fuller chroma, or high or low value, or accent it with high lights and shadows or with detail.

On the other hand, it is impossible for an object in the distance to have harder edges or more chroma, or to be of a lighter or darker value than a corresponding similarly colored object in the foreground. And there is no way in which to cause an object so painted to take its proper position in the plane of the distance.

Though mention has been made of ocular factors that have to do with the differentiation of planes in indirect vision, it would be well to consider a little more fully the apparent relative distances of objects that we see on the sides of our field of view or in indirect vision. Apart from the ocular factors mentioned, the underlying cause of depth effects in indirect vision is the same intervening atmosphere that produces them in direct vision and the laws which control it are the same as those which have been described. There is this important point to consider, however: in our indirect vision there is a softening of all edges, loss of detail and color, and an increase in the brightness of blue. In any given obliquity of indirect vision, therefore, the laws mentioned in connection with direct vision, though they are still operative, will be modified by these peripheral changes as they exist at that obliquity.

At this point the following question may well be asked: If, as has been shown, a soft-edged patch of color appears to be on a plane behind a hard-edged one, why will not foreground objects on the sides of the canvas, depicted with soft edges as seen in indirect vision, appear on a plane behind the center of focus? They do not, because in our visual experience we see such nearer objects on the sides of our field of view with soft edges. That is, while soft-edged objects on or near the line of direct vision tend to recede, the same softening of edges will not have the same effect on objects seen in indirect vision and depicted so as to suggest that they are seen in indirect vision.

IV. THE USE OF DEPTH FACTORS BY PAINTERS

Ordinarily, the factors that are considered most important in producing the effect of depth are perspective, including difference in size and detail, and shadow and shading. Aërial perspective, overlay and accents, and the ocular factors, although used, are generally considered rather secondary. It is, however, the skillful use of these factors which gives the pictures of Corot, Turner, Homer, and others their exceptional depth quality.

Using the depth lens, compare Corot's *Paysage* (Fig. 7), Daubigny's *Landscape* (Fig. 6), and Turner's two pictures (Figs. 8 and 9) with Troyon's picture (Fig. 4). The difference is not one of degree. There is a difference in quality. Corot's and Turner's works actually float in space and real atmosphere. And once looked at with the depth lens, the same quality can be seen without it.

If we analyze Corot's painting (Fig. 7) with the lens, we shall at once be struck with

the great skill with which he uses the exactly correct values in his little light and dark flicks and branches to cause them to take their right planes. He also makes use of sharp and soft edges, overlay, and accents. His use of accents is shown in the sharp branches which bring the fuzzy trees into their proper plane. His use of extreme light and dark values in his flowers is very effective. A false value appears in the light horizontal line of distant water over the woman's head. Seen with the depth lens, it floats out into the middle ground. The bad value may be due to faulty reproduction.

Daubigny's use of values, overlay, and accents is, if possible, more effective than Corot's.

Turner is in certain respects more skillful than Corot. He produces more planes, more actual atmosphere. He uses values both light and dark to bring his whisks of clouds and smoke forward. He also uses both light and dark values to bring up the surface of the water while his reflections go down. The total effect, although produced as described, looks as if it had been accomplished by overlays of very thick glazes.

It will be noted that tangential accents are used for the surface of the water, while the reflections are largely radial. Tangential brush strokes are also used for the smoke in the upper left-hand corner as well as for the atmosphere just below and above it. A study of his picture in Fig. 9 will show a similar use of circular or tangential accentuation. In both pictures he makes continued use of overlay and accents. Examples of tangential accentuation bringing a background too far forward will be found in some of Renoir's pictures, where his characteristic furry brush strokes have been made in a tangential direction on the background around the heads and bodies of his subjects.

An example of a most successful handling of depth effects in indirect vision is furnished by Thayer's painting of Monadnock at the Metropolitan Museum (Fig. 25). The picture, with its relatively limited center of interest or focus sharply accented and with its outer parts becoming more and more vague towards the edge of the canvas, is a very good example of an artist's impression while holding one center of focus. The difference in plane between the trees and near mountain and the distant summit is very marked. And this effect is obtained even though the mountain top, the most distant object in the picture, is depicted with the greatest contrast and detail and the trees which stand nearest are very soft and vague.

Increased illusion of depth results not only from making use of a larger number of factors that contribute to the illusion of depth, but also from legitimate exaggeration of these factors. The necessity of this exaggeration is due to the fact that pictures are always painted on a surface. This imposes limits in two ways. First, it makes it impossible to reproduce the stereoscopic depth resulting from binocular vision in three-dimensional space; and second, the fact that all the objects depicted, whether far or near, are on one plane, and we see and know they are, counteracts the effects of the depicted perspective both linear and aerial. To make this a little clearer, let us take a scene in which all the objects are at so great a distance that binocular vision plays no

part in the depth effect, but which still gives a marked impression of depth due to linear and aerial perspective. Now suppose we reproduce this scene exactly upon a canvas, with the true linear perspective and aerial perspective, including exact change of value, chroma, edge, and so forth with distance. Even when we have done this, the picture will not give the same impression of depth as we get from the scene. The reason for this is that given above. All the objects depicted are on the plane of the picture and our recognition of this fact counteracts the depth effects suggested by the linear and aerial perspective. As explained, we can be relieved of this counteracting effect by using something like the depth lens to liberate us from the plane of the canvas; but this, of course, is not a practical solution. There is, however, a solution that will tend both to make up for the loss of binocular vision and to overcome the flattening effect of the painting's being on a flat surface. That is to exaggerate the perspective factors—exaggerate them to such an extent that the picture will give as nearly as possible the same impression that is received from the scene. A very good example of a most masterly use of this exaggeration is shown in Rubens' painting (Fig. 24), especially in the accenting and edges on the ruff and head of the woman.¹⁴

So far, we have emphasized using the various factors to increase the illusion of depth in pictures. While this is the use to which painters would ordinarily put them, they are, as suggested by William James the painter, equally useful when it is desired to reduce the depth effect.

In such works as wall paintings it is desirable to avoid the appearance of a "hole in the wall." This objectionable effect may be introduced by ordinary perspective or difference in size with distance. By depicting distant objects with the characteristic values, edges, and so forth of near objects they can not only be brought forward to any desired plane but can also be made to counteract the objectionable effect of ordinary perspective, without which it is difficult to present any pictorial representation. The wall paintings of Puvis de Chavannes are a most interesting example of such a use of depth factors. A study of his paintings in either the Boston Public Library or the Metropolitan Museum shows that he accomplished his results largely by depicting distant objects with relatively strong contrast and in relatively warm and high chromas.

V. CONCLUSION

A consideration of the use of the factors which produce an illusion of depth raises the question as to the superiority of the different technical styles of painting. For instance,

14. The following paintings are worthy of study with the depth lens as examples of successful handling of depth and atmospheric effects. This list is by no means inclusive of all the artists who have successfully handled the problem.

Rembrandt's *Danaë*, Museum of Fine Arts, Boston, is notable for the depth in the center of focus, especially between the staff and the woman's body. His

painting, *The Mill*, in the Widener Collection at Philadelphia, has a very deep clear atmosphere.

Turner's *Slave Ship*, in the Museum of Fine Arts, Boston, his *Whale Ship*, in the Metropolitan Museum, and his *Colliers*, in the Widener Collection all give what might be called "tangible atmospheric effects." His *Grand Canal*, in the Metropolitan Museum, is interesting in the handling of the sky and

should a painting be like, first, that which the painter gets when he focuses on every part of the scene he is painting, or, second, like that which he gets when he focuses only on objects which lie in the plane of the object of principal interest, as described by Professor Butler in *Painter and Space*, or, third, similar to the impression he receives when holding his focus on the center of interest alone, as described in our paper *Vision and the Technique of Art*.

I have not advocated any one type to the exclusion of the others because the question as to different types of pictures is not a question as to whether one type is the only right means of expression and the others wrong, but a question as to which type is best suited for the particular kind of expression the artist has in mind. Just so, in the art of writing there is no argument that poetry is the only right kind of expression and prose and scientific writing are wrong. The only question may be as to which is the best for the particular expression in question. Now, while this is a very interesting matter, it has only an indirect bearing on the subject of this paper. The various ways of producing effects of depth are equally useful for all types of expression. The "reproductionist" can use it to help him analyze what he sees, so that he can make his canvas a more exact reproduction of the objective scene. The realist, who wishes his canvas to make the same impression on the observer as the scene itself would have made, can exaggerate the depth factors to help produce that effect. The pure subjectivist, who is interested in reproducing neither a scene nor an objective impression, but who wishes to reproduce as accurately as possible the subjective impression produced upon him by the scene, will make much the same use of the depth factors as the realist except that he will also use those factors which have to do with the peripheral part of his field of view, such as distorted linear perspective, and radial and tangential accentuation. And those who desire to flatten their pictures, either for the subjective effect or to avoid depth in mural decorations or other design, will be better able to accomplish

water. And his Aosta, a water color there, shows how he got his effects with water colors.

Almost all of Corot's paintings are worth studying. His painting of two people in a boat, in the Elkins gallery of the Philadelphia Museum of Art, is a very good example.

Whistler's painting of a Venice scene in moonlight, in the Elkins Gallery, shows his great knowledge of the subject.

Monticelli, in his Court Ladies, in the Metropolitan Museum, has produced a marked effect in a technical manner different from the others.

All of Winslow Homer's work is worthy of study. His water-colors at the Fogg Art Museum in Cambridge are very good.

Renoir's La Seine à Chaton, in the Museum of Fine Arts, Boston, is a very successful and unique handling of bushes. The depth in the bushes on the left of the picture is especially effective.

Twitchman's pastel called Hillside, at the Mu-

seum of Fine Arts, Boston, impresses me beyond any other picture as producing the greatest illusion of depth with the simplest technique.

Almost all of Metcalf's pictures that I have seen show great skill in the matter.

In many of Bellows' paintings there is a clear atmospheric depth similar in a way to that in Homer's paintings, though not so marked; it was produced, I should say, by a somewhat similar handling of values and contrast at edges.

Sargent, in The Master and his Pupils, at the Museum of Fine Arts, Boston, has produced a most marked depth effect in the dead branches of a tree on the left of the picture.

The works of the living artists I have not studied carefully through lack of opportunity to see their pictures. Of those that I have studied, Mr. Benson's work stands out. Both his paintings and his etchings are successful in respect to the illusion of depth.

their purpose if they are conversant with the factors which control the illusion of depth.

By way of summary, I should like to emphasize three points:

First, it is evident that there is a larger number of factors at the disposal of the artist for the purpose of producing depth and atmospheric effects than is generally recognized, by the use of which he should be able to cause any object in his picture to take any desired plane. He should be able to separate his objects in space, as exemplified by Corot and Rubens, or to envelop them in an atmosphere of any desired turbidity, as exemplified by Turner. Or he should be able to reduce the intervening space and flatten his picture, as exemplified by Puvis de Chavannes.

Second, due to the rather complicated interrelation and to the number of these factors, which permit of innumerable combinations, it is not easy to use them most effectively. It would seem that to be able to do so a complete understanding not only of the different factors but also of their relative effectiveness would be necessary.

Third, those who are interested solely in reproducing the exact relationships that exist in nature, which is really an attempt to make a scientific transposition of a scene to a surface, are restricted to depicting the various depth effects as they actually exist in nature. All others should use the various means of suggesting the illusion of depth as tools of expression and should arbitrarily exaggerate or reduce their effects to produce whatever impression of depth they are endeavoring to express in their particular canvas.

DRAWINGS BY BENJAMIN WEST

BY ALFRED MANSFIELD BROOKS

TO Benjamin West, the first American artist, Alfred de Vigny's definition of a great life as being a thought of youth wrought out through later years is applicable. But the truth is, West's life was greater than his art. From the age of eight, when, tradition says, Cherokee Indians in the home of his birth, which is yet standing on Swarthmore College Campus, taught him the use of paints, to beyond eighty when, full of honors, he died in London, West wrought unremittingly upon his childhood thought to be an artist. He was so successful and he came to be so famous that in 1762 he was elected President of the Royal Academy, the successor of Sir Joshua Reynolds. No higher honor could be paid to an artist in that day, and none higher can come to one in this. But in his own time, and since, his fame mainly rested on the Biblical and historical subjects of which he painted legion. This tended to obscure his luster as a portrait painter, the thing he was preëminently in an age of preëminent portrait painters. To become acquainted with Benjamin West at his best, which means with his portraits, is a revelation to most people. So is it to know his drawings, which are often masterly and never insipid or bombastic. Of these drawings more than two hundred, thanks to generous givers, have come into the recent possession of Swarthmore College.

The value of drawings, perhaps the chief value, lies in the fact that they make it possible to know the artist intimately at the instant he is moved to memorialize his subject. Then, if ever, is he inspired. With all his strength of heart and hand he tries to make permanent some part of what his eyes behold and his soul rejoices in. His aim is to do so truly and beautifully. He lays his seeing before us, and his feeling bare. He would interpret the works of God, and himself, the chief of those works. A great portrait is always more a picture of the painter than the painted, said Samuel Butler, who perfectly understood these things. He makes over to others, to all men, the record of his inspiration and, thereafter, as Whistler remarked, we have the ephemeral influence of the master's memory—the afterglow, in which we are warmed for a while, the worker and disciple. In the presence of a fine drawing we are as nearly present at the birth of inspiration as we can ever hope to be. A fine drawing is the first fruit of an artist's power to express his emotion by means of linear representation of what it was that stirred him. "From nature doth emotion come." The purpose of the artist is to endow it with permanence, "to keep through dead time the everlasting hour." His simplest and most responsive tool is a lead pencil. He seizes it and draws. For example, he sees and experiences (I mean that his seeing produces certain reactions of feeling and understanding in him) a group of pines against a sunset sky: "It is not the trees that constitute the experience [his emotion]; it is the trees plus you [him, the artist] the you of

that incomparable hour," to repeat the trenchant words of Ludwig Lewisohn. It is John Galsworthy's "perfected expression of self in contact with the world." This is what any work of art is, hence what that most intimate, immediate, and lovely of all works of art, a drawing, is. Until this is thoroughly felt and understood to be true, men will continue to mistake information about art for appreciation of art, and men will continue to " 'file' the fifteenth century, and 'pigeon-hole' the antique," loving no art and being none the happier for any art, present or past.

Now, in order to make his drawing an accurate, hence adequate, vehicle of his emotion, the artist must be able to see and to set down quickly and precisely not only the lines which make the contour of his subject but among them to select those few which are most apposite to his seeing of his subject and to his resulting experience. All good drawing is truth-telling. What many persons fail to understand is that the truth-telling in good drawing is akin to that in good writing. It records the truth about physical facts and, further, the truth about the emotion which those facts beget. This was never said more clearly than in *Diana of the Crossways*:

"Set descriptions are good for puppets. Living men and women are too various in the mixture fashioning them—even the 'external presentment'—to be livingly rendered in a formal sketch. I may tell you his eyes are blue, his features regular, his hair silky, brownish, his legs long, his head rather stooping [only the head] his mouth commonly closed; these are the facts, and you have seen much the same in a nursery doll. Such literary craft is of the nursery. So with landscapes. The art of the pen [the pencil in drawing] is to rouse the inward vision—we write on darkness, instead of laboring with a drop-scene brush, as if it were to the eye; because our flying minds can not contain a protracted description. That is why the poets [the great draughtsmen] who spring imagination with a word or phrase, paint lasting pictures."

One of the greatest difficulties for the beginner and one of the last to be conquered by the full-fledged artist is acquiring the power to see his subject in the terms of his medium, line as denoting pure shape, or lines in combination to denote light and shade, that is, solidity—I mean, making a correct adjustment between what he sees and what he knows, and setting it down on paper convincingly. It is this power which knits the parts of a drawing into one whole, a power which prevents a drawing when finished from being merely a combination of irrelevant parts, parts not seen with an eye single to order, a designer's eye, but with that sort of multiform sight which spells confusion or, in other words, antiart. However many or few its lines, careful, hasty, sketchy, even seemingly careless, a good drawing always speaks of completion in the sense of the intended being done. This is the test. Any drawing which meets it successfully is sure to suggest a close relationship between the center and what surrounds it, ordinarily speaking, the details, for so only can an illusion of reality and an interpretation be composed at one and the same time. It means that lines and shades, if there are shades, have been joined or fitted together in the way which makes an harmonious,



FIG. 1



FIG. 2



FIG. 3



FIG. 4

Swarthmore, Pa., Swarthmore College: Drawings by Benjamin West



FIG. 5—Swartmore, Pa., Swartmore College: Study for St. John,
by Benjamin West



FIG. 6—Swartmore, Pa., Collection of Alfred M. Brooks:
Drawing by John La Farge

hence vital, entity, a work of art, an absolutely new thing in the old world. This thing is the subject plus the man who took the pains to draw it *con amore*, as well as truthfully, in the sense of photographically. Examine West's masterly sheet of dogs (Fig. 2). In such fragments it is that genius makes itself known; it appears in one and not in the other of two drawings, of the same subject, let us say, but by different men, one of whom gives only a matter-of-fact delineation while the other, the genius, lifts, not changes, matter of fact to the higher level of matter of inspiration. This drawing of dogs is slight, very much so. But it is slight in the sense of numbering few lines of high-powered description, not slight in the sense of doubtful intention or uncertainty either through failure to see the tilt of an ear, set of a jaw, turn of an eye, or to perceive in these, and many other details, the canine nature, alertness, astuteness, pugnaciousness of the animal within. A few lines here, a touch there, and West draws the portrait of the creature, not a mere likeness. He has worked the miracle which every good drawing is. But no amount of words will ever make that miracle understandable, though they may help. Only sympathetic study of the subject through much time, and similarly sympathetic study of its description in lines, the drawing, can do that.

Look carefully at the charming landscape with a tower in the middle distance (Fig. 4). It is a note, little more, yet prescient as well as reminiscent of the feeling which a fine view gives, wholly apart from the elements, trees, fields, hills, which constitute the view. Look still again at his extraordinarily graceful figure of a seated woman (Fig. 3), or the pretty figure of a child knitting (Fig. 1). How few the lines in each, but how sure the place of every one, and its direction! Knowing what he wanted to do, when he wanted to do it, and how, he did it. The half-baked artist talks of his feelings, and the would-be connoisseur about the artist's feelings, when in reality both are excusing themselves, consciously or not matters not, for failure to see singly and whole. The former fumbles his line. The latter fails to see that the line is fumbled. To attain finish with simplicity, to recognize it when someone else attains it—there's the rub! Benjamin West in his drawings attained it again and again, and in his portraits often. As a rule he missed it on his over-labored, sacred and historical canvases in "the grand manner."

In a capital book on *Drawing* A. S. Hartrick says: "The practice of the greatest masters is to make the extreme edge on the shadow side without any strong line the true contour, while, if a firm line is wanted on the light side, as may be needed at times for the purpose of force, it belongs to the background."

Of this, West's crayon drawing of St. John is an instance (Fig. 5). If that which goes before can ever be reminiscent of what follows, John La Farge offers examples in plenty. The essential likeness between his drawing (Fig. 6) and the St. John of West is striking and instructive. The similarity of doing and the dissimilarity of nearly identical subjects constitute one of the fascinations of art. To appreciate the fact and to delight in it amount to mystical initiation.

One of the distinguishing qualities of West's drawings, a charming quality in any drawing and never a common one, is their firm hold upon reality without the least suggestion of vying with nature, futility however striking, which always separates the work of merely imitative men from that of creative artists. Of this his figure of a judge in wig and gown is an instance (Fig. 8). The barest difference of line has been made to distinguish between the texture of the materials of trousers and gown, between wig and neck linen, with never a hint of vulgar realism. The thing is a drawing. There it stops. It is an artist's creation based upon a carefully studied reality, a man, but it is *not* the man. It is no straining after the clever or the specious, yet it is a monumental record; much in little, that is the art of it. It gives us perfect rightness so far as it goes, but no competition in the sense that we are led to believe we are looking at a reflection in a mirror. West respected the rules of the game too highly for that. An able draftsman, he used few strokes, and exact. Why? Because he thought about them. He would not have rivaled the camera if he could, good as that might be and, conceivably, for many purposes, but not those of art, better. We have here drawing pure and simple, conceived of as interpretation of a subject, and so carried out; a reflection upon the matter in hand, not a reflection of it; the labor of a thoughtful man, not a sedulous ape. The result is success of the kind that is never striking at first but, much examined, is astounding.

When West composed he often attained great beauty which, as often, he lost in his painting, portraits excepted. Whatever of the divine fire he had when drawing was apt to die down to coolness, or go out entirely, during the subsequent process of coloring. He added color to drawing. He did not compose or create in color. With his pencil he did compose and create. The difference between a drawing, however good as such, and a drawing to which color has been added, not united, is as the difference between the poles. West has left many fine composition drawings, for example, his God the Father above the clouds in "unapproached light" (Fig. 7). George Sheringham says that such drawings are "among the most valuable to us of all works of art. Valuable because the composition sketches of a great man are generally pure inspiration throughout. In them he has worked too rapidly to be conscious of his method—he has been as unconscious as a writer is of his handwriting. Napoleon said, 'Inspiration is the instantaneous solution of a long meditated problem'; what more perfect description could one have of a composition sketch. . . . In the first rapid sketch that records his [the artist's] inspiration his mental vision is clear; the interruptions—inevitable in the slow process of painting a picture—having not yet occurred."

It would savor of special pleading to claim these "interruptions" as excuse for many of West's vast canvases. His portraits need little if any excuse. Further, it is unfair and, worse, it is stupid, not to enjoy the exceptionally fine quality of many of his drawings. The recent centenary of his death, with exhibitions of his work, has done much to awake intelligent interest in his portraiture, and to get it appreciated at its real worth.

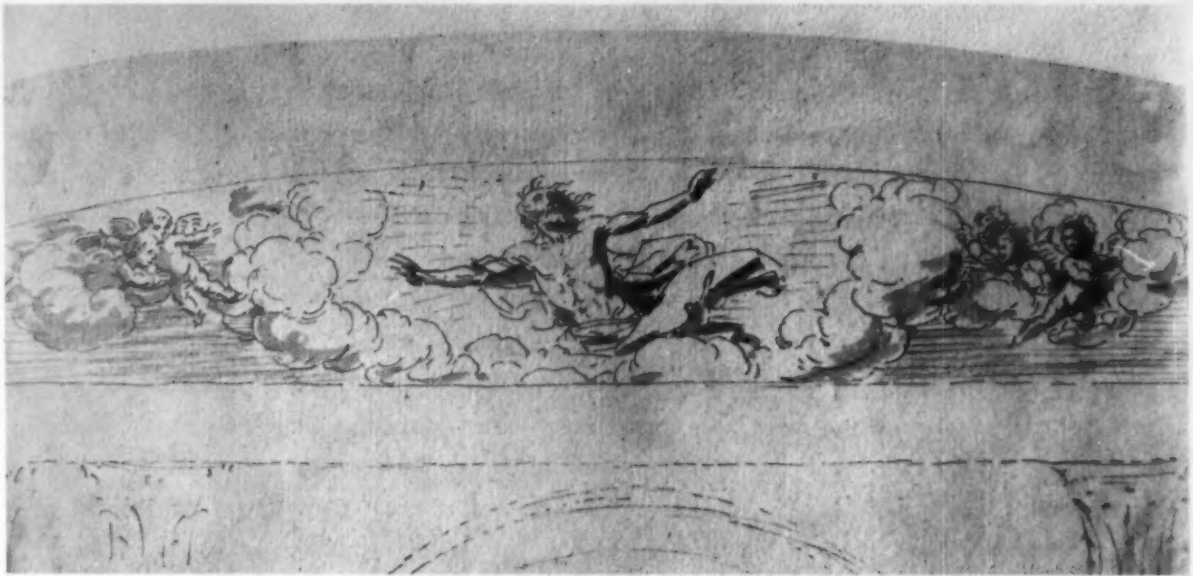


FIG. 7



FIG. 8



FIG. 9

Swarthmore, Pa., Swarthmore College: Drawings by Benjamin West

Adequate appreciation of his drawings is yet to come. Meanwhile it is well to bear in mind a remark of Fenollosa's: "Art is the power of the imagination to transform materials—to transfigure them." The lovely drawing of a boy bent intently forward (Fig. 9), his hair, ear, eye, most of his hand, and that obviously older hand resting on the boy's breast, is to the point. Mark the evident haste which drew the throat line as visible through thumb and forefinger of the hand of the man who does not appear. Note the masterly way in which the pressure of the boy's fingers on that hand is suggested. Heed well the fact that West left this drawing uncorrected because he preferred the obvious impossibility of a transparent thumb and finger to any loss of rightness which might come by correction and elaboration. This drawing fulfilled for him its purpose. So he left it. So we have it! The artist may transfigure the common things of every day, that is his high business, but whoever looks at his work must acquire power to recognize, that is, to experience, the transfiguration when it comes his way. The glorious game of art is for two; for the one and the many. The artist, in the present instance West with his drawings, is the one; you or I, the other, and all of us, the many.

THE PARIS EXPOSITION: A GLIMPSE INTO THE FUTURE

By ROGER GILMAN

WHAT is the Paris Exposition? It is a new world of the applied arts. It is a new world of reality, reality in the square masses of concrete construction, reality in the smooth surfaces of machine products, reality in wonderful new materials offered by our mastery of science and transport, reality in the severe plainness of our practical age, reality in a marvelous effort to design everything and copy nothing. And it is a new world of color, in rich and strange harmonies.

Extending over the Alexander Bridge to the Invalides, and up and down both banks of the Seine, it is an international attempt to gather up the new decorative movements of our time into one whole. It is the most arresting and stimulating sight in Europe this summer. It is a new creation in everything from its ivory mouldings to its cubist flower beds (Fig. 1), from its blue marble walls to its square cigarette holders.

How did such a revolution come about? The war, with its five-year hiatus in the arts, forced a certain detachment, led to a new appraisal. Its grim reality brought a distaste for artificial and purely traditional art. It resulted in an irresistible sense of the end of an epoch. A starting point was found in the previous work of a few hardy spirits like Hoffmann and his group in Austria, possibly Sullivan and Wright in Chicago. Men awakened to new economies, to new ideals of convenience and of practical instead of ornamental living, to an intimacy with machines and mass production and their possibilities.

Why has so little been heard about the exposition and that little so hysterical? Tourists have been bringing back reports that seem like rumors of battle or rout. The reason is that it is all wholly new to us; we have not seen it taking place as has Europe; we have not carried over these changes—some of which we ourselves originated—into our decorative arts. The proof is that not a single item from America is to be found there. Whatever the official reasons may be for our absence, we undoubtedly could not have made a showing.

Is not the exposition ugly? But is a fine locomotive ugly, or a modern automobile? Do we not rather call them satisfying, because perfectly suited to their use? And the more closely interiors and furniture are designed along the lines of use, the more they give us this same sense of satisfaction. Not being accustomed to this substitution of use for beauty, except in factories, nor to such new demands on our eye, we shall not find the exposition beautiful in the old familiar way. Certainly it has faults agreed on

by everyone, the crowded pylons on the Place de la Concorde, the bridge treatment, the four towered pavilions. But at its best the exposition has a reality, an imagination, and an automobile-like perfection that more and more stirs and fascinates us.

To anyone who is willing to give serious attention to the matter it is evident that the creators of the movement have proceeded not from arbitrary choice but from straight thinking. Modern construction and methods of erection tend to straight lines and flat surfaces, to be left in the plaster or finished with some sort of facing. From this come the rectangular shapes of walls, with recesses or projections to give solidity and movement (Figs. 1 and 2). A feeling for the space in the room itself has often produced octagons and vaulted ceilings; and certainly one feels the effect of well varied sizes, as in the small vestibules followed by the spacious reception halls, tiny boudoirs and big studies. The designers have logically discarded all cornice mouldings, as seeming to be part of the construction while purely an addition to it. The desire to avoid every hallmark of a worn tradition is apparent. For the wearisome prevalence of classic motives during the last century and a half, even in the humblest Continental salon, must be remembered in any consideration of the forward movement.

But in turning away from those classic forms as the basis of all decoration, from cornices, pilasters, wall and ceiling panels, designers found their way open to a new decoration, in itself a logical conclusion to modern construction—the charm of the finishing material. This opened up a profound vista, including the beautiful old materials, others that had been neglected or half developed, and new ones resulting from modern invention. To these vigorous men a wall treatment largely of marble was not too severe, and so they have sought out new varieties, in quiet colors with little pattern. Synthetic marbles, not imitative, but standing on their own beauty of veining and color, and tinted cements, brought to a dull luster, have offered further possibilities. Woods of new colors and cuttings are used (Figs. 3 and 4), fabrics of all textures from the elegance of satin to the gaiety of printed linen, translucent glass in tiles and sheets, and, of course, plaster in all degrees of roughness and grain. For floors there have been created new tiles of softer colors, and mosaic blocks in all sizes and shapes; for light fixtures and radiator grilles, hand-hammered iron in gray and black tones (see the cover design of this magazine); for furniture mounts, silver and ivory. Gray glass of dull finish, touched with brown or black, under the hands of its guiding genius, Lalique, has proved itself one of the discoveries of modern decoration (Fig. 5).

With such concentrated interest in surfaces, textures have come more into the field and impress one at every turn. The different lusters, firm and clean, are especially sought and studied, from the broken sheen of a velvet curtain to the brilliant glitter of a lacquer box. Lustrous satins, changeable silks, polished woods, inlaid silver, highly glazed porcelains, all are called on for their effective textures. And there are half-tone textures as well, mat surfaces, friezes of plaster roughened by profuse small ornament like stars, walls of a succession of rippling undulations. But the smooth surface is the

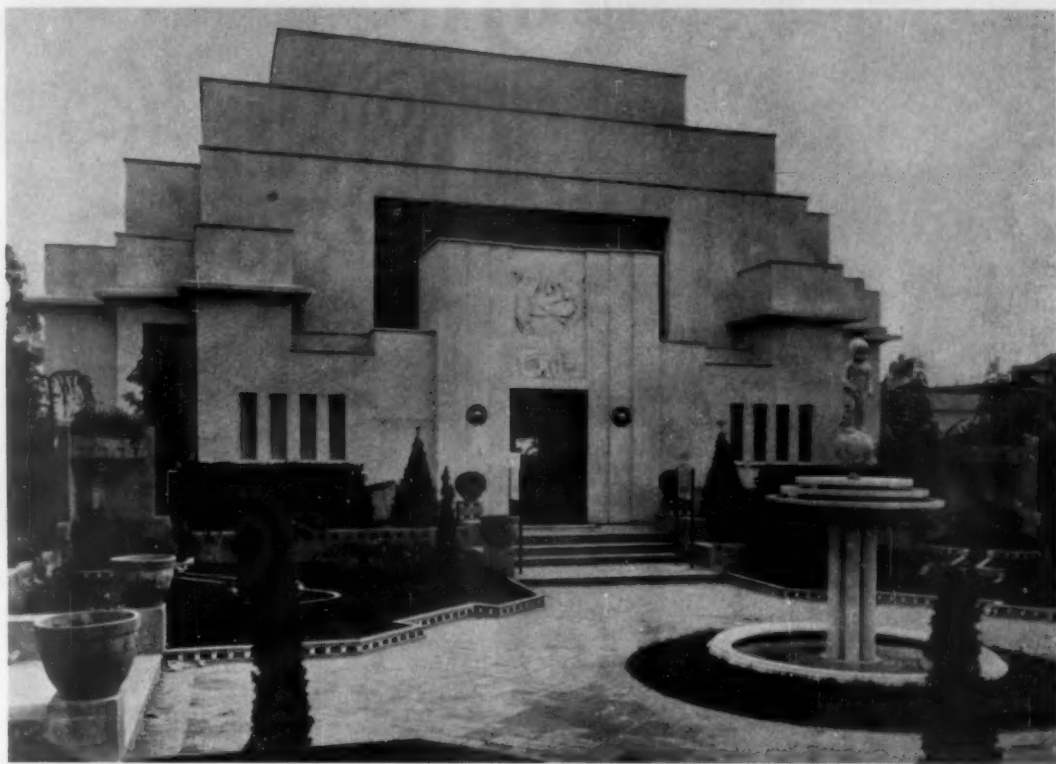


FIG. 1—*Paris Exposition: Pavilion of a Collector, by Rublman*

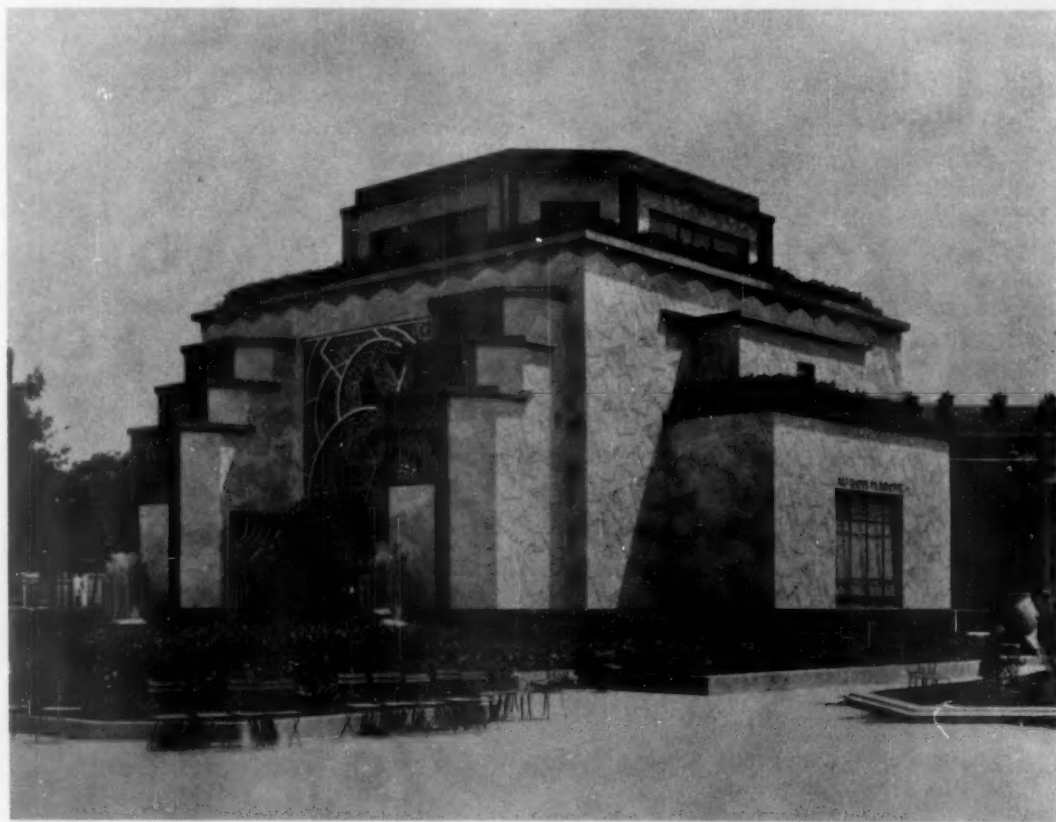


FIG. 2—*Paris Exposition: Pavilion of "Pomona," the Modern Art Section of the "Bon Marché," by Boileau*



FIG. 3—*Paris Exposition: Sideboard in two unusual Woods with Ivory Handles, by Dominique*



FIG. 4—*Paris Exposition: Salon Piece in Amboyna Wood, by Léon Jallot*



FIG. 5—*Paris Exposition: Glass Vase, by René Lalique*

prevailing one, for it is the simplest, most hygienic, and most practical. First appearing in European furniture at the time of the inlaid or painted panels of the Italian Renaissance, only to be swamped in the craze for the carved relief of the Baroque, reappearing in the smooth curves and inlays of the Dutch school at the beginning of the eighteenth century and again in the polished veneers of Hepplewhite and Riesener in the second half of the eighteenth century, it is now used throughout the interior. There is a significant distinction between decoration in the flat and in relief, a distinction usually considered to mark the difference between orient and occident. And it does account for much of the new effect of these interiors. But we are making this flatness our own. Our modern love for cleanliness and convenience has already led us to smooth finishes for the kitchen, the hospital, the office, the machine. As we coördinate our decoration with the apparatus of our everyday life, we tend to find our natural expression in smooth surfaces.

Ornament finds but a small place in this system of textures and materials. The delicate circles, the slim diagonals that play across the veneers (Fig. 6), the geometrical areas in the leaded glass or in the rugs have captured one part of its field. Texture has usurped another. All classic ornament is banned, natural foliage savors of the *art nouveau* experiment. What then remains? Severely conventional flower forms and purely abstract design. The few flowers used seem to be based on circular forms, such as sunflowers and tulips, and they appear chiefly in the silks and satins.

The geometrical ornament is far more striking (Figs. 7 and 8). Sometimes it is a leaf-like repetition of curves, more often a sort of cubist group of converging rays, or whirls of varying sharp planes repeated and thrown together. As a broken surface, a "gray" tone, or an accent it is undoubtedly effective. But it belongs entirely to the general effect; nobody can be supposed to look at the motive for its own charm, as in the classic periods. The assumption is that the man of today has neither time nor interest for lyric motives; roses on the back of his chair, a spreading bunch of acanthus leaves upon a column to carry a beam, such things seem trivial to him. And shall we blame him? Where his ancestors in Gothic and Renaissance times saw leaves and flowers around them in their small town life, he sees the geometry of buildings and machines; where they prized elegance, he admires simplicity; where they loved allegory, he wants reality. And why, after all, must decoration be derived from plants and vines unless you like it so; why not from construction itself and its lines?

Just as ornament is none too interesting, it is none too small. Indeed by all our canons of judgment, it is much too big; it is not only in large units but it has no fine gradations. This heaviness of scale is notable in all the fixed decoration, in the depths of wall recesses and ceiling beams, in the overhanging projections on which the ceiling often rests. It is true of the stationary furniture (Fig. 6), the tables on heavy pedestals, the secretaries and wardrobes, the beds that rest directly on the floor (Fig. 7). What does all this mean? Is it a certain masculine quality that runs through the flat

planes, the smooth and severe finish, the bald ornament? Or is it the feeling for the solid that appears in these features, the feeling that pervades much modern painting and sculpture? Or is it merely another form of heavy French detail? Whatever it may be, it is one of the chief obstacles to real admiration for the style. Worst of all, it defeats the general purpose of restfulness and perfectly balanced proportion.

If the walls and furniture are usually conservative, relieved only by the richness of their material, the color in some details is extremely advanced. The walls, ceilings, and floors, the materials of the furniture are usually in tones of whites and grays and browns. Gray seems to be the keynote, and very easy on eye and mind it is in some of the rooms, very lovely are its variations accompanied by the red-browns of furniture, rugs, and paintings, with accents in white, black, and dull orange. But in other rooms, equally sober in their fixed decoration, the textiles and furniture dazzle one with intense color, ingenious and supercivilized, even to the point of discord.

As the keynote to the French section of the exposition there is a proposed embassy, carried out by the Society of Decorators and approved by the Ministry of Fine Arts. Here, for instance, is a dining room with gray marble walls, black and white floor, gold bas-reliefs, vermilion chairs and tables. Next is a small smoking room with black lacquer walls and furniture, accents of silver and orange, a rug of flame, but a wall panel in silver and pink. Into a small room of silver and green and dark gray is thrown a big cushion of aniline purple. One recoils, bewildered. How can it be that men who elect simplicity and repose should endure this fiery complication? Or are they craving a new sensation? Have they chosen instead of the old classic leafage and arabesque a new and subtle distraction in these combinations of modern color? In music we have added to the pure melodies of the eighteenth century our subtleties of tempo and harmony, even to syncopation and dissonance. Are we here entering upon similar changes in color? For undoubtedly these combinations are the work of artists who know what they are about; so much is plain in the perfection of their simpler harmonies. Perhaps to them such an intense rug may be merely a vivacious tempo, such a dissonance in color merely an exhilarating chord. Certainly the technique of color has been pushed far forward in the last twenty years. Everywhere in the exposition the spectator feels that he is traversing its newer paths. Possibly in the presence of some of these strident clashes he is in the very front line, looking over into still unconquered fields.

What part do the allied fine arts, painting and sculpture, take in the interiors of this new world? Sculpture, at least, has a far larger rôle than it has had for a century. Sculpture seems to be everywhere. In a monumental room, such as the hall of the embassy just described, a huge polar bear of polished marble projects boldly out from the wall. In a vestibule the principal interest centers on a nude figure on a pedestal. Bas-reliefs large and small serve as wall decorations. The character of all this, as might be expected, is entirely modern. There is an expression of brute force, as in the polar bear, whose huge legs seem to move without even betraying the muscles within. There



FIG. 6—*Paris Exposition: Dining Room, by Georges Champion*



FIG. 7—*Paris Exposition: Bed Room for the "Primavera," Modern Art Section of the "Printemps" Department Store, by Mme. Cbaucbei-Guilleré*



FIG. 8—Paris Exposition: Private Office in Pavilion of the
 “Louvre” Department Store, by Djo Bourgeois



FIG. 9—Paris Exposition: *The
 Sculptor*, by J. Costa

are groups of powerful workmen bending over the tasks of strenuous labor. There are heavy and elemental nudes (Fig. 9). All of this is simplified to the last degree, whether by polished surface or by archaic or even geometrical treatment of the details. But all of these figures, somber and ponderous, even clumsy in scale, are entirely one with their surroundings. As a lighter note there are occasional small decorative pieces which stand alone on secretary or on taboret, their former habitat, the mantel shelf, being gone. These may be playing figures or attenuated fauns or humorous little animals, all highly polished to avoid any suspicion of realism or of personality. Very distinguished they seem and placed with extreme care.

Painting appears to play no longer its dominant part of the last century. Pictures are treated primarily as decorative spots, small, widely separated, chosen purely for their assistance to the color scheme and framed to belong to the wall. Their subjects are chiefly flowers, or still life, or figures painted for their flat pattern, based on the work of Van Gogh, or Gauguin. But if the easel paintings seem to have no real place and to be admitted rather as a concession to tradition, mural paintings and particularly paintings in *tempera* on rough plaster panels, are given more scope. Such painting becomes logically a part of the building and the qualities of flatness and dull color accord well with the architectural style. As in the sculpture, favorite subjects in the painting are bony, brutal faces and barbaric bodies. Sometimes they are very beautiful but many of those on the ceilings oppress one with the same sense of oversize and weight. The allegories, too, have undergone a change. Subjects like sport and dress are now admitted. And such an emancipation from goddesses and youths, such a matter-of-factness in procedure and people!

To Americans is it just another foreign exposition? North and South America have declined to go in, officially or individually. Our tourists stay away; one may pass an afternoon there among tens of thousands of Europeans and count his own countrymen on the fingers of two hands. Moreover, we have recently opened our own Early American Wing at the Metropolitan Museum, and public and manufacturers alike are captivated with the sentiment and simplicity of our own primitives. And finally—and inevitably—"why change when we have the beautiful old forms?" Ah, but everything does change. A new music, a new poetry, a new theater, are as inevitable as a new year. Whether you call it the spirit of the artist reaching out for his own way of expressing himself or whether you call it the subtle impact of new points of view in the world, all these arts of the mind are already changing under our eyes.

And of course material arts must change. New materials, new inventions, new standards of convenience, of haste, of health have changed our ideals of satisfaction in all the apparatus of living. We have come to the skyscraper of fine mass and austere walls. Left far behind are the golden cornices, the columns large and small, and the shreds of previous styles into which we have vainly tried to fit them. Gone are the red wheels and shining brass of our fathers' engines; forgotten are the figure-heads of their

frigates, even the scutcheons on the bows of their ocean liners. Dare I add also the sweeping skirts, and the leghorn hats of our mothers? These straight slim gowns, these geometrical sweaters, these tiny toques of felt, do they signify nothing?

If the exposition is really a milestone in the decorative art of Europe, as is probably true, we are at least in the highroad of change although we hardly know it. What will be our own version of the style when in our own time and way we come to it, no one can say. Certain it is that what is shown at Paris is the Continental version, partly Austrian, partly French. With our quiet, even timid, taste and our conservatism in the arts we shall do something quite different. But the principles of the style will be there, its complete adaptation to use, its simplicity of form, its variety of materials, and its new knowledge of color.

RESEARCH METHODS IN MUHAMMADAN ART

By ARTHUR UPHAM POPE

ONE reason why studies in Muhammadan Art make such negligible progress in America while important contributions are appearing continually abroad is because of the total absence here of genuine criticism. Books are not reviewed with either frankness or knowledge, serious errors go unchallenged, methods are nowhere discussed or standards enforced. Of healthy controversial literature, the mark of growth and vitality, there is little trace. This situation is to no one's advantage and is a reproach to American scholarship. Those who believe Muhammadan Art is really important should see that every sincere contribution in this field meets not only an open-minded welcome but, what is quite as important, the same sort of searching criticism which is as a matter of course accorded to contributions in other departments of the history of art where scholarly standards have been longer established and more strictly maintained. Such coöperation between scholars—for good-tempered criticism is always that—is especially needed for the clarification of the obscure and complicated, yet important, problems of carpets.¹ For these reasons the brief study of early Persian medallion carpets published by M. S. Dimand in *The Art Bulletin* for March, 1924, deserves to be carefully examined and not merely ignored as is the usual custom.

The three carpets described, illustrated, and discussed in Dr. Dimand's article are all in the Metropolitan Museum, but many of the type are known. One of the three is in the Altman Collection and the other two in the Ballard Collection. Dr. Dimand concludes from his observations that Number 1² is from northwest Persia, probably Tabriz, made about the year 1480; that Number 2 is also from the same region but much later, made between the years 1500 and 1530, and that Number 3 is not from Persia at all but is a much later Asia Minor product.

The reasons advanced for these conclusions are open to question and they involve methods and assumptions that are without warrant. Briefly, Dr. Dimand argues that these carpets can be dated primarily by comparison with the miniatures of the Bizhad school, which contain many clearly depicted rugs; that we can assume that contemporary carpet design followed a development closely parallel to that of the pictured rugs; and finally that, since the Bizhad miniatures show toward the end of the fifteenth

1. Although considerable literature on the subject has already appeared in America, except for one or two instances there is scarcely a sentence of genuine productive criticism in all these thousands of pages.

2. It is convenient to follow Dr. Dimand's designation of these pieces.

century a gradual supplanting of the traditional purely geometrical decorative forms that had previously dominated Persian art by naturalistic Chinese designs, we can assume that rugs which are more geometrical than naturalistic are of the same date approximately as the rugs of roughly similar style in the miniatures, even although the resemblance is otherwise not very close.

The evidence of the Bizhad miniatures is neither clear nor simple and it is easy to derive wrong conclusions from them. In the first place, not one in twenty miniatures ascribed to Bizhad could possibly be from his hand and many of them are not even the work of his immediate pupils. No wholly satisfactory Bizhad canon has yet been formulated. We can, accordingly, only in a relatively few instances be sure of the exact date of a painting that bears his name. The problem is further complicated by the fact that miniatures of one date are not infrequently inserted in manuscripts of another. For example, there is in the British Museum a Nizami, dated 1442, with twenty miniatures. But Dr. Martin thinks with reason that all the miniatures are the later work of Bizhad and that, if true, means a discrepancy in date between manuscript and miniature of about seventy-five years.

Not only are we not sure of what is and what is not Bizhad, not only are we uncertain about the dates of much work ascribed to him, but a large number of the carpets that appear in these miniatures probably never had their like on land or sea. Sometimes the properties employed in Persian painting are fanciful and the rugs perhaps more so than the others.³ Current Persian practice illustrates this. There is probably no well defined type of rug produced in Persia in the nineteenth century that is not well known and more or less accurately classified, yet we find hundreds of modern miniatures depicting rugs of no recognizable type.

There is, of course, important material for the history of carpets in the work of Bizhad and other Persian painters, but it must be extracted with extreme caution. To put it at its worst, and it is a possible worst, we cannot construct an adequate time scale for dating early Persian carpets by appealing to imaginary rugs drawn by unknown artists of uncertain date and having no proved connection with actual rug weaving. It must be especially emphasized that we have no warrant for assuming that the styles in the so-called Bizhad miniatures are closely paralleled by the actual facts of rug history. But this and even more is assumed by Dr. Dimand. He says that the dated manuscripts "show us the development of Persian ornament from the purely geometrical style to the naturalistic." But Persian art never was purely geometrical and it is certainly very far from true that geometrical forms dominated down to the close of the fifteenth century. Three centuries before Bizhad we find in innumerable examples of Persian pottery and in bronzes, also, superb naturalistically drawn animals: gazelles, ibex, wolves, foxes, rabbits, horses, sheep, camels, a lively and com-

3. This is much less true of Indian miniatures, in which we often find well known types of carpets reproduced with perfect fidelity.



FIG. 1—New York, P. W. French & Co. Persian Rug

prehensive menagerie, often displayed against a background of rich and realistic foliage.⁴ No one would deny that from the eighth century on China continuously influenced Persian art in the direction of a more animated and pictorial treatment⁵ and that Bizhad expedited this tendency. But that the essence of this movement was concentrated in a few decades around the year 1500, that it is adequately recorded in the miniature paintings of this time, and that we need only compare rugs with paintings to get dependable dating is far to exceed the warrant of known facts.

But not only is Dr. Dimand's thesis, and more particularly his method, compromised by these considerations but his tacit assumption that differences in style are primarily due to differences in date is unnecessary and erroneous and quite disqualifies the argument as it relates to rugs Number 1 and Number 2. We can agree, in the first place, that these rugs are markedly different in style and, in the second place, that Number 1 is more crude and geometrical in drawing; but to conclude from these two propositions that rug Number 1 is therefore earlier is to commit a complete *non sequitur*. A safer and more likely conclusion is merely that rug Number 1 comes from a neighboring but more provincial community where rug planning showed less sophistication and rug weaving less skill. Such stylistic variations due to environmental and traditional determinants are common enough in all rug-weaving countries. It is a commonplace that rich and elaborate rugs of florid elegance may be woven in one city while at the same time only a few miles away in some poorer community rugs are made which, although similar to the more sophisticated type in general design, have all of the patterns geometrized and everything rendered in a relatively crude and harsh manner.⁶

Instead of calling all of these medallion carpets pre-Safavian and instead of attributing any of them to the fifteenth century, which we should do only with the greatest reluctance, we might meet all of the known facts of the case by placing the origin of these carpets outside of any important Safavian metropolis.⁷ This would account for their geometrical character, such as it is, and also for the absence of Chinese motives, conspicuous in the court carpets of the early sixteenth century. Chinese motives never greatly influenced most of the Caucasus regions and apparently not even the Kurdish districts. More than a century after they are supposed to have revolutionized Persian rug design they had scarcely put a mark on the important weavings from Kerman and Shiraz.

There is another reasonable alternative to the dubious early dating, and that is to

4. We should not forget that Marco Polo admired the naturalistic designs he found in Kerman textiles in the thirteenth century.

5. Yet cf. Sir Thomas Arnold, *Survivals of Sassanian and Manichaean Art in Persian Paintings*, Oxford, 1924.

6. Cf., for example, the early nineteenth-century rugs woven in Senneh with those of the nearby town of Bidjar, and Tabriz rugs with those of Karabagh. On Dimand's argument all Bidjars and Karabaghs would have to be dated prior to Senneh and Tabriz rugs, and

if the geometrical argument were pushed with an absurd and desperate consistency all the many geometrically drawn Persian rugs from Herez to Souj Boulak and Veramin and south to Hamadan and Feraghan and even Lars would have to be placed in the fifteenth century.

7. The hypothesis that most of the medallion carpets were woven in Karabagh rather than Tabriz has more to commend it than can be brought forward here. It is quite worth testing.

regard the cruder or more geometrical rugs as survivals from an earlier time. The persistence of old-style work alongside of newer styles is characteristic of Persian art. Besides, styles in rugs do not change as suddenly as styles in modern dress.

The argument given for assigning these rugs (Numbers 1 and 2) to northern Persia is that we find in them Armenian motives such as "the large rosettes with a kind of cross in the center." If it could be shown that this design really came from Armenia it would be a useful contribution, but inasmuch as it has been a common pattern in the carpets of eastern Caucasia for at least three hundred years it cannot be used as evidence of the kinship of any rugs with Armenia without further proof. The conclusion that these rugs were woven in northwest Persia is no doubt correct, but the reasons given do not prove it and Dr. Dimand offers no evidence at all for assigning them to Tabriz, an identification that is at least questionable in view of the number of other possible allocations.

None of the arguments which Dr. Dimand advances for attributing carpet Number 3 to Asia Minor are satisfactory. The first argument is that some of the motives that appear in this carpet, "such as the angular stems and the combination of the floral motives with geometrical figures, are unknown in Persian art but are characteristic of the carpets of Asia Minor." This is a baffling statement, for geometrical figures and floral motives are combined in a vast number of Persian rugs from Karabagh to Hamadan, while carpet Number 1, which Dr. Dimand has just been arguing is geometrical, has some delightful little blossoms, rosettes, and lotus flowers set on curving stems in the field: he says, "The flowers of the first carpet are small."

The second argument is that "the method of decorating with repeated conventional flowers, the black-brown ground, and the blue and yellow flowers appear in the Ushak and Armenian carpets." To this it may be replied that all three of these features can be found in both Caucasus and Kurdish rugs, the black-brown ground being particularly common in the Southern Caucasus, and, as for the Armenian rugs, there are no such things in the sense of a definitely constituted class with characteristic and original designs.⁸

Dr. Dimand goes on to say, "Other elements which point to Asia Minor are the Ghiordes technique and the cross motives formed of four parts like lilies." But inasmuch as most Persian rugs and practically every Caucasus rug are woven with a Ghiordes knot that fact cannot do much pointing. The pattern referred to consists of a quatrefoil with lotus palmettes in each of the lobes, with a doubled arabesque blossom, or in some cases a lily, on the oblique axes between, the whole centering generally on an eight-pointed star. This pattern is neither exclusively nor originally of Asia Minor invention and use. The fundamental form appears in Korean pottery of the Korai

8. The theory of Armenian carpets has been repeated often enough in the last fifteen years, but so far no evidence has been produced. Those who think otherwise should meet in specific detail the criticisms and

arguments advanced by Dr. Heinrich Jacoby (*Eine Sammlung Orientalischer Teppiche*, Berlin, 1923) and those advanced by the writer (*Jahrbuch für Asiatische Kunst*, Berlin, 1925).

period; a clear and fine example is offered by a so-called Guebri plate of about the tenth century found near Hamadan and recently acquired by the Art Institute of Chicago; it is fairly common in Rhages pottery, especially on the luster tiles. A developed form appears in the so-called Beshir carpets of west Central Asia and it is very common in Persian rugs, one of which (Fig. 1), formerly in the collection of C. F. Williams, could not possibly belong in Asia Minor but was probably woven in Karabagh. An early carpet with approximately the same pattern is in the collection of James Deering now on loan at the Art Institute of Chicago. It was probably woven in western Persia in the seventeenth century. Another example with a simpler edition of the pattern is the garden carpet in the collection of Sidney Colvin of London.⁹ Still another rug of the class, now owned by the Lucerne Fine Art Company of Lucerne, is illustrated by Bode and Kuehnelt.¹⁰ This also is the work of Persian weavers. It is doubtful if anyone can show that this pattern is "derived from the old carpets of Asia Minor." The drift of rug design has been steadily from the East to the West, and those who hold that Persian rugs owe anything to the designs of Asia Minor must show the unmistakable priority of the latter.

The evidence thus far advanced for attributing this carpet (Number 3) to Asia Minor proves to be insubstantial. It will be worth while to see if those who hold to a Caucasus or Kurdish provenance can make out a better case.

In addition to these features of Dr. Dimand's article that are open to question there are quite a number of statements not necessarily relevant to the argument that are either very questionable or at least call for further amplification and support. For instance, Dr. Dimand says that Indian carpets were known in Persia at the time of Bizhad. A statement so contrary to all ordinary opinion ought to be explained. Were there carpets woven in India at that time? If so what is the evidence and what were they like and how do we know that they were known in Persia?

Dr. Dimand goes on to say, "These new floral motives [Indian], as well as the Chinese cloud bands, are more and more frequently used and finally supersede the arabesques, which are now less conventionally executed. . . . The best example of this style is the Ardebil carpet." But the arabesque was never thus superseded really, save for a time in some of the carpets from Herat and again in the eighteenth century in some places. Persian carpets have continued to show arabesques as important elements of the design down to the present time. To cite a few examples: arabesques are essential in the sixteenth-century carpets from Khorassan such as the Baker hunting carpet and the Fletcher prayer rug in the Metropolitan Museum; in the borders of vase carpets, persisting well into the seventeenth century; in the beautiful Kashan silk rugs such as that in the Musée des Gobelins and the Morgan piece now in the

9. A small illustration of this appears in Diez, *Die Kunst der Islamische Völker*, p. 194, and a larger one in *Orientalische Teppiche*, Vienna, 1892-6.

10. *Vorderasiatische Knüfteppiche*, III, fig. 25.

Widener Collection and other well known examples of the type. It is an important feature of the Polonaise rugs which were produced well into the middle of the seventeenth century at least. All of these pieces are subsequent to the Ardebil carpet and there are on the latter piece many superlative arabesques of the finest and purest style, particularly in the corners.

There are other statements in the article that are open to exception but these may suffice to show that the problems of rug history are still a thicket of thorns which is not likely to be cleared away without genuine coöperation and the mutual insistence on exacting standards of scholarship by all who are seriously interested.

REVIEWS

GREEK AND ROMAN PORTRAITS IN ENGLISH COUNTRY HOUSES. By *Frederik Poulsen*.
Translated by G. C. Richards. 112 pp. Oxford, Clarendon Press, 1923.

THE above title represents an important addition to the list of books by one of Europe's leading archaeologists, whose publications on Dipylon Vases, on Early Greek Art, on Delphi, and especially on Greek and Roman iconography have attracted world-wide attention. There is no scholar, unless possibly Lippold or Studniczka, who knows more about Greek and Roman portraits. Poulsen was just the scholar to visit England on the Carlsberg Fund and study sculptures in English private collections which Michaelis had not included or had not reproduced in his *Ancient Marbles in Great Britain*, published as long ago as 1882.

Poulsen took with him an expert English photographer, Mr. R. B. Fleming, who overcame great difficulties in photographing busts in most inaccessible positions whence they could not be moved. Considering this, the one hundred and twelve illustrations and fifty-seven figures are excellent. Poulsen visited Rossie Priory in Scotland, Ince Blundell Hall in Lancashire, Margam Park in Glamorganshire, Wilton House in Wiltshire, Houghton Hall and Holkham Hall in Norfolk, Lansdowne House in London, Sion House at Chiswick, and Sir John Soane's Museum. Other mansions have been visited recently, and I understand that another volume will soon appear.

Poulsen made many important new discoveries. Among them perhaps the most interesting was that of a new type of bust of Plato in Holkham Hall, which forms the frontispiece. Other important new additions to ancient iconography are the peculiar singing poet at Houghton Hall, the statue of Alexander at Wilton House, the medalion of Carneades at Holkham, the priest of Dionysus at Houghton, the stately Roman statues at Sion House, the statue of Livia at Holkham, the brutal Roman at Margam, the melancholy barbarian at Rossie Priory, and several Roman portraits at Lansdowne House. Other interesting portrait busts, though previously known, were poorly published, generally without illustrations, and are now properly published for the first time. There are busts of Thucydides, Sophocles, Socrates, Antisthenes, Epicurus, Metrodorus, two of Menander, two of Homer, a head of Augustus, two of Tiberius, three of Hadrian, Antinous, Antoninus Pius, four of Marcus Aurelius, Commodus, two heads of Septimius Severus, Julia Domna, Caracalla, Maximinus, Gordianus Pius, Philippus Minor, Otacilia Severa, and many unidentified heads.

Poulsen has also conferred a great benefit on archaeology by eliminating numerous forgeries and worthless antiques. So he has discarded all but 22 of 142 "antique portrait-busts" in Wilton House. He does not enumerate the works in each collection separately except for Sir John Soane's Museum, in which case the items are kept to-

gether to illustrate Roman provincial sculpture in England in the second century A.D. He has arranged the material in chronological order so as to bring together contemporaneous or related portraits. Text and illustration are *en face*.

There are some supplementary remarks to Michaelis on the collections (pp. 7-26) with pretty views of country estates and their galleries. Then follows a detailed description of the plates with measurements, an account of restored parts, description, history, and discussion of the type, and the literature of the subject. The text throughout shows the highest form of sane scholarship, and Poulsen's conclusions will in almost all cases be accepted. In only one case would I venture to dispute his experienced authority. No. 74, a niche relief in Garden Temple at Ince Blundell Hall, I would date in Trajan's Age rather than in Hadrian's. The first man of the three at the left has Trajanic hair, and the drilled pupils and hairdressing of the woman are found earlier than the period of Hadrian.

To sum up, this is one of the most valuable of recent publications on Greek and Roman sculpture, full of original material and sound learning, beautifully illustrated. It should be in every library of art, every museum, and every university; and connoisseurs will want a copy for their private collections.

DAVID M. ROBINSON

MALEREI UND ZEICHNUNG DER GRIECHEN. By Ernst Pfuhl. 3 vols.; 918, 361 pp; 805 illustrations. Munich, F. Bruckmann, 1923.

MEISTERWERKE GRIECHISCHER ZEICHNUNG UND MALEREI. By Ernst Pfuhl. 90 pp.; 160 illustrations. Munich, F. Bruckmann, 1924.

THE first of these publications is a most exhaustive and much needed work. The art of Greek painting and especially the study of Greek vases have been engaging the attention of scholars as well as the general public to an unusual extent in recent years. The pure lines of Greek drawing and the stern pictorial figuration of Pompeian frescoes, often reflecting the Greek paintings of great masters, are now duly admired and much appreciated.

There has been no accurate or scientific history of the subject in any language, unless possibly the very fair treatment in Perrot and Chipiez's *Histoire de l'art dans l'antiquité*, which Pfuhl (p. 7) characterizes wrongly as full of "*grobe Irrtümer*." But that covers only a part of the subject and has not yet reached even the Hellenistic Age. Walters' *History of Ancient Pottery* is the only detailed account in English, but it is a revision of Birch and very inaccurate and out-of-date. So Professor Pfuhl's volumes make their appearance at the right moment, when we need such an encyclopaedic account. It was, moreover, a good idea not to limit the text to vases but to include all forms of drawing and painting and to give elaborate attention also to the Fayum and Roman paintings. There are monumental expensive publications in German, like the

Furtwängler-Reichhold plates or Hermann-Bruckmann's *Monuments of Ancient Painting* and Riezler's *White Athenian Lecythi*, but now the best of these are reproduced by Pfuhl in his third volume, which is given up completely to excellent reproductions, some in color. That three such beautifully printed volumes can be sold for less than \$15 ought to put to shame American and English publishers who are charging as much and more for a single archaeological volume.

Professor Pfuhl has read enormously and knows every technical and philological problem connected with his subject, but he shows the really artistic values of the remains of Greek painting as well as giving us learned details and discussions. In only a few cases would scholars dispute his conclusions. It would be a *tour-de-force* to read such an exhaustive book but no student of Greek art or even of art in general can fail to use the three volumes as an authoritative work of reference, where the latest literature is cited. Full credit is given to non-German scholars and the great English authority, Beazley, who now succeeds Percy Gardner as Lincoln and Merton Professor of Classical Archaeology in Oxford, has greatly influenced Pfuhl's conclusions. Much attention is also paid to the Americans, Hoppin and Luce, whose name appears as Bleeker Luce instead of Stephen Bleeker Luce. In the exhaustive bibliographies, however, I miss certain books of Langlotz and especially Poulsen's *Etruscan Tomb Paintings*. For Thericles (p. 46) there is no reference to Walter Miller's article on Thericles in the *Transactions of the American Philological Association*, LII, 1921, pp. 119-131. In the bibliography for names of vases (p. 46) a reference might have been added to the *American Journal of Archaeology*, XIII, 1909, pp. 30-38, where I established the meaning and form of the vase, *oenophorus*.

Pfuhl's work is so complete that one wishes it had been made absolutely complete by including a first chapter on the important Minoan and Mycenaean original paintings which have been found in such abundance during recent years.

The *Meisterwerke* is an abridgment in one volume, which costs only 14 marks. There is one improvement over the longer work in that the labels of the illustrations tell where the originals are. Americans will be glad to know that Professor Beazley, the greatest authority in the world on Attic red-figured vases, is to give us soon an English translation.

DAVID M. ROBINSON